

Fiscal Decentralization and Macroeconomic Stability: Theory and Evidence from Pakistan

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Abstract

The research on the relationship between fiscal decentralization and macroeconomic stability has been no results about the benefits of fiscal decentralization. The current paper is investigated the impact of fiscal decentralization on macroeconomic stability by using the misery index at country level for Pakistan. This study used secondary data covering the period of 1974 to 2013. Ordinary least square technique is used to estimate the impact of fiscal decentralization on macroeconomic stability. This study used the variables like GDP, Unemployment rate, Investment, Adjusted provincial revenue, Adjusted provincial expenditure. Macroeconomic stability is the dependent variable. This study shows that a significant and positive impact of fiscal decentralization on macroeconomic stability.

Keywords: Macroeconomic Stability, Adjusted Provincial Revenue, Adjusted Provincial Expenditure, Pakistan.

I. Introduction

Pakistan's economy is still passing through the phase of stabilization. It is very important and compulsory to bring the macroeconomic stability in order to increase the raising the growth making better quality of human life. Pakistan is underdeveloped economy and facing high inflation, energy crises, increasing expenditure on security issues. Double digit inflation increase the high unemployment is a major part related to Pakistan's macroeconomic stability. Pakistan is the sixth largest popular country in the world having 177.10 million people and is growing at the rate of 2.05 percent per annum.

Fiscal decentralization is considered as an important policy. It is a weapon to achieve economic efficiency and ensure effective governance through financial

autonomy of the provincial government. Decentralization policy is considered to have a positive influence on economic growth because it helps in better implementation of social policies. Different studies with different themes have been conducted on fiscal decentralization. Fiscal decentralization in terms of economic growth, some measures the fiscal decentralization with economic development.

Over the past three decades, there has been a growing tendency towards fiscal decentralization (FD) in emerging and developing economies. Fiscal decentralization occurs through the devolution of fiscal responsibilities for the public spending and revenue generation or collection from the central level government to the provincial or local level governments. Fiscal decentralization is an effective strategy to promote economic growth by increasing the efficiency of the public sector. Fiscal decentralization promotes sound macroeconomic management through: (i) efforts that streamline public sector activities, (ii) reducing operational and informational costs of service delivery, and (iii) increasing the competition among the sub-national governments in providing public services.

Akai and Sakata (2002) define fiscal decentralization as “devolution of the power and authority linked with decision making to basic – level of government”. According to Thiessen (2001) “Fiscal decentralization is considered transfer of responsibility associated with accountability to sub-national government”. Fiscal decentralization is concerned with social issue that means to distribute fiscal power and responsibility of national (central) government to the sub-national government and local government (Neyapt and Bilin 2005).

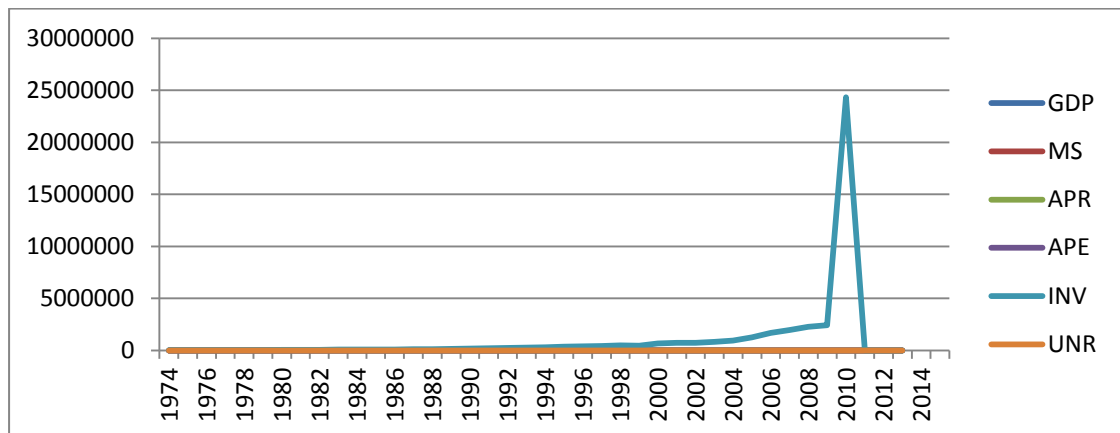
Government of Pakistan, has taken two major steps toward fiscal decentralization by signing 7th National Finance Commission (NFC) award between the federal government and provincial government and by passing 18th Constitution Amendment has conferred sub national economic authority upon the provinces and 7th NFC award has allowed out only transfer of more funds but also wide range of responsibilities from the federation to the province. After these developments, now the province will have more autonomy in performing various function like provision of health and education facilities, infrastructure development and maintained of macroeconomic stability.

The recent study determines in literature on many steps. First, this study used inflation as indicator of macroeconomic stability. However, this study used misery index (sum of inflation rate and unemployment rate) is the most important for

measuring the macroeconomic stability (Martinez and McNab 2006) . Second , there is no comprehensive study exists that analyzes the problem of fiscal decentralization and macroeconomic stability .Third ,this study simultaneously measures the impact of revenue and expenditure decentralization on macroeconomic stability .Fourth ,this study used latest available data on the measures of fiscal decentralization .In the developing and transitional countries special arrangements on fiscal equilibrium between central and sub-national governments are needed . Fiscal decentralization in Pakistan has been given a lot of attention recently.

It is generally believed that fiscal decentralization has positive and significant impact on macroeconomic stability (King and Ma 2001) . Some other studies showed that there is negative and insignificant relationship between fiscal decentralization and macroeconomic stability through price stability (Feltenstein and Iwata 2005) . Macroeconomic stability of the country is analyzed by different economic factors .Macroeconomic stability is determined by the level of fiscal decentralization .There are two types of fiscal decentralization (1) Revenue decentralization and (2) Expenditure decentralization.

Figure 1: Trends of dependent and independent Variables



Source: Author's calculations

Trends are most important part of all studies .I have present the macroeconomic stability and fiscal decentralization in Pakistan. Therefore, government revenues 11: and expenditure are to use proxy of fiscal decentralization in Pakistan. It is measured in Rupees. In this figure GDP is represents by blue line and adjusted provincial revenue is presents by red line. This shows that there is positive and negative relationship between dependent and

independent variables. This graph shows the trend of dependent and independent variables.

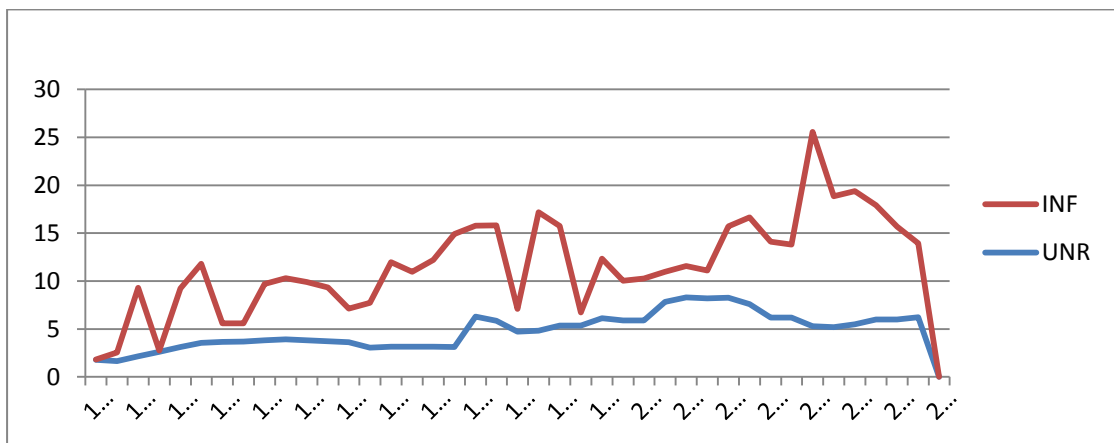
II. Theoretical Framework

In this section we develop a theoretical framework to determine the indirect impact of fiscal decentralization on economic growth through macroeconomic stability. Decentralization means the transfer of authority and responsibility from central government to sub-national government. Fiscal decentralization defined as “a two-dimensional policy institution that involves either decentralization of a tax instrument when local government have the power to raise taxes or decentralization of expenditure when local government bear responsibility for implementing expenditure function”. The effectiveness of the fiscal decentralization depends upon; (a) appropriate expenditure-with division of function among different levels of government depending upon their comparative advantage ; (b) appropriate tax or revenue assignment ; (c) efficient design of a system of transfers and its proper implementation [Kardar(2006)] .

We investigated the direct impact of fiscal decentralization on macroeconomic stability. There are many method to define the macroeconomic stability. But in this paper, macroeconomic stability is the combination of inflation rate and unemployment rate. we determine macroeconomic stability by using the misery index. Misery index was introduced by Arthur Okun.

$$M1 = UNR + INF$$

Figure 2: Macroeconomic Stability Index (Misery Index)



Source: Author's Calculations

M1 is the macroeconomic stability. UR is the unemployment rate and INF is the inflation. Macroeconomic stability is analyzed by the level of fiscal decentralization. Fiscal decentralization is the presently an important policy and a weapon in the world. Fiscal decentralization is attached with fiscal problem that mean to distribute fiscal power and responsibility of the central government to the sub-national government and local government. Theorem of decentralization the dead weight losses that results from decentralization are often considered the welfare gain from decentralization (Oates theory 1972). The traditional theory of public finance has made a strong case for a major role for fiscal decentralization. This case was based on an improved the allocation of resources in the public sector (Oates theory 2000). Fiscal decentralization is the process of “devolution of power and authority to local administration”. Based on this definition, we measure the fiscal decentralization with respect to both revenue and expenditure (Iqbal and Nawaz 2010).

$$M1 = f(FDR, FDE)$$

M1 represents the macroeconomic stability. FDR and FDE represent the revenue decentralization and expenditure decentralization. To capture the impact of fiscal decentralization i.e. revenue decentralization and expenditure decentralization separately and simultaneously on macroeconomic stability. This study used the three types of model. In the first model the government is only intended to perform adjusted provincial revenue, than i develop this regression model.

$$M1 = \alpha_1 + \alpha_2 (GDP) + \alpha_3 (INV) + \alpha_4 (UNR) + \alpha_5 (APR) + e \quad \text{-Model 1}$$

M1 is the macroeconomic stability which determined by adjusted provincial revenue, GDP, investment, unemployment rate. In model 2, we assumed that government is only intended to perform adjusted provincial expenditure, than i develop this regression line.

$$M1 = \alpha_1 + \alpha_2 (GDP) + \alpha_3 (INV) + \alpha_4 (UNR) + \alpha_5 (APE) + e \quad \text{-Model 2}$$

Model 2 suggest that macroeconomic stability is determined by adjusted provincial expenditure, GDP, investment, unemployment rate. In modal 3, we assumed that government performs revenue as well as expenditure simultaneously. So we define following regression model.

$$M1 = \alpha_1 + \alpha_2 (GDP) + \alpha_3 (INV) + \alpha_4 (UNR) + \alpha_5 (APE) + \alpha_6 (APE) + e \quad \text{-Model 3}$$

III. Data and Methodology

A. Data Sources

I used different sources to obtain the required data. Data on government expenditure and government revenue at national and sub-national are taken from Pakistan Bureau statistic. Data on other variables are taken from world development indicator. I used secondary data. This study covers up to 40 observations ranking from FY 1974 to FY 2013.

Table 1: Description of Variables

Variables	Description of variables	Units of measurement	Expected sign	Source of data
Dependent variable				
M1	Macroeconomic stability	Percentage	Positive	World Development Indicator
Independent variable				
GDP	Gross domestic product	LCU	Positive	World development Indicator
UNR	Unemployment rate	Percentage	Positive	Hand Book of Statistic
INV	Investment	Cost price	Positive	Hand Book of Statistic
APR	Adjusted provincial revenue	Rupees	Negative	Pakistan Bureau Statistic
APE	Adjusted provincial expenditure	Rupees	Negative	Pakistan Bureau Statistic

Source: Author's Calculations

B. Construction of Variables

Fiscal decentralization is measured with respect to revenue and expenditure.

Adjusted provincial revenue

This fiscal decentralization variable is defined by deducting grant-in-aid from provincial government revenue and is expressed as the ratio of the total government revenues.

$$APR = PR - \text{Grants} / TR$$

Adjusted provincial expenditure

Adjusted provincial expenditure is defined as the ratio of total provincial expenditure to the total government expenditure minus defense expenditure and debt servicing.

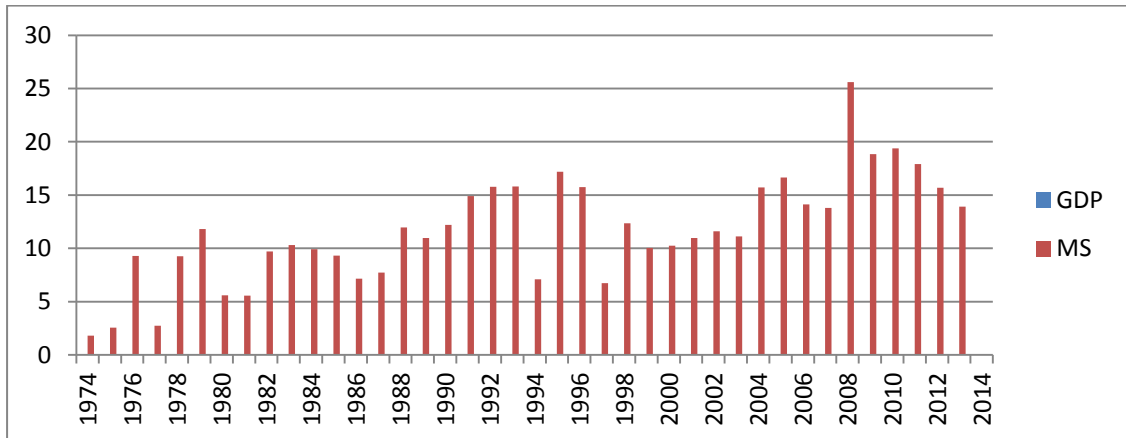
$$APE = PE / TE - (\text{Defense} + \text{debt servicing})$$

Misery Index

Macroeconomic stability is the combination of inflation rate and unemployment rate.

$$M1 = UNR + INF$$

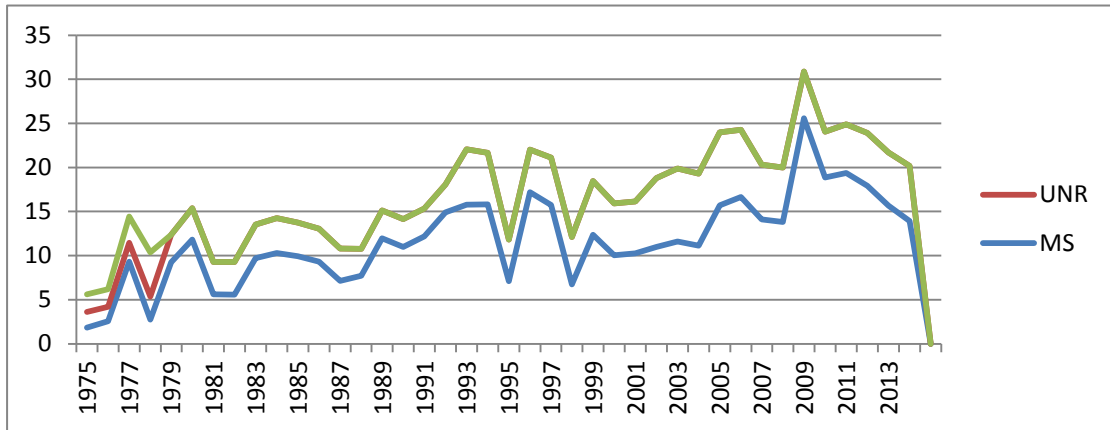
Figure 3: Macroeconomic stability and Gross Domestic Product



Source: Author's Calculations

This graph shows the relationship between macroeconomic stability and gross domestic product. Gross domestic product has positive and significant impact on macroeconomic stability. Macroeconomic stability is dependent variable.

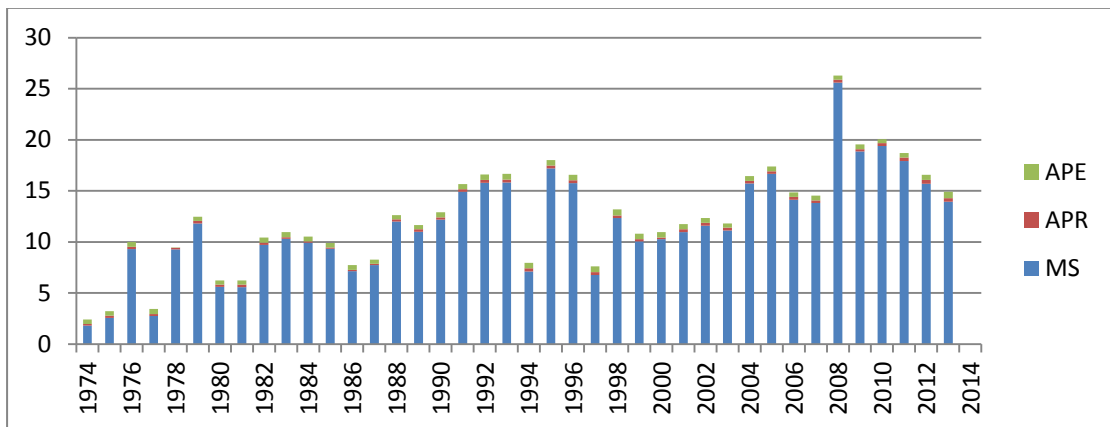
Figure 4: Macroeconomic stability and Unemployment Rate



Source: Author's Calculations

This graph shows the relationship between Macroeconomic stability and Unemployment rate. Macroeconomic stability is the combination of the unemployment rate and inflation rate. So, I say macroeconomic stability has negative impact on unemployment rate. When macroeconomic stability improve than unemployment rate decrease. So that, this graph shows the relationship between macroeconomic stability and Unemployment rate.

Figure 5: Macroeconomic stability, adjusted provincial revenue and Adjusted Provincial Expenditure



Source: Author's Calculations

This graph shows the dependent variable and independent variables. MS which is Macroeconomic stability is dependent variable. Adjusted provincial revenue and Adjusted provincial expenditure are independent variables. Adjusted provincial revenue and expenditure are positive impact on macroeconomic stability. When macroeconomic stability improve, than government revenues increase and government expenditures are decreased. So

that, this graph represents the relationship between macroeconomic stability and adjusted provincial revenue and expenditure.

C. Methodology

The methodology applied to examine the “macroeconomic stability and fiscal Decentralization: Theory and Evidence from Pakistan”. This study used the Ordinary Least Square method.

Ordinary least square method

Carl Friedrich Gauss (1821) a mathematician and he presented Ordinary Least Square Method in (1974). OLS method is used to examine the association among variables. This method applied when all the variables are stationary at level. When the variables are stationer at level, it means that OLS is useful and applicable.

In the regression analysis mostly the model is used is as following:

$$M1 = \alpha_1 + \alpha_2(\text{GDP}) + \alpha_3(\text{UN}) + \alpha_4(\text{INV}) + \alpha_5(\text{APR}) + \alpha_6(\text{APE}) + e$$

M1 is Dependent variable, X1, X2, and X3are independent variable. In this paper the modal that shows the macroeconomic stability and fiscal decentralization in Pakistan .

D. Model Specification

This study used ordinary least square to examine the relationship between macroeconomic stability and APR, APE, GDP, UNR, INV. In order to determine the impact of these variables on the macroeconomic stability. The multiple regression equation is specified the functional form given as follow .

$$M1 = f(\text{GDP}, \text{UNR}, \text{INV}, \text{APR}, \text{APE})$$

Where,

M1 = Macroeconomic stability which is dependent variable.

DGP= Gross domestic product

UNR= Unemployment rate

INV= Investment

APR=Adjusted provincial revenue

APE = Adjusted provincial expenditure

IV. Analysis and Results

A. Regression Analysis

This table is used for determined regression results. In first column independent variables are showed. The second column is coefficient this is useful to give information

about the impact of independent variables on dependent variable. The third column is standard error.

Table 2: Regression Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.711511	4.241661	-0.639257	0.5269
GDP	6568.207	3164.292	2.075727	0.0456
UNR	1.233210	0.440832	2.797460	0.0084
INV	2.88E-07	1.56E-07	1.840896	0.0744
APR	-44.15199	12.59624	3.505173	0.0013
APE	-8.070606	6.859515	-1.176556	0.2475
R-squared	0.536711	Mean dependent var		11.73040
Adjusted R-squared	0.468580	S.D. dependent var		4.950173
S.E. of regression	3.608603	Akaike info criterion		5.542000
Sum squared resid	442.7487	Schwarz criterion		5.795332
Log likelihood	-104.8400	F-statistic		7.877669
Durbin-Watson stat	1.615874	Prob(F-statistic)		0.000052

Source: Author's Calculations (Eviews 7.0)

This table shows the relationship between macroeconomic stability and fiscal decentralization. This table shows that adjusted provincial revenues and expenditures are negative except remaining variables. Gross domestic product is positive and significant related to the macroeconomic stability by given the probability 0.05. Unemployment rate is positive and significant related to the macroeconomic stability. Investment is positive and insignificant related to the dependent variable. Adjusted provincial revenues are negative and significant and adjusted provincial expenditures are negative and insignificant to the dependent variable. This table shows that 1 unit change in macroeconomic stability decrease the value 6568.2 of GDP and one unit change in macroeconomic stability decrease the 1.233 of unemployment rate. When macroeconomic stability improve than unemployment rate decrease because more job opportunities are available than unemployment decrease. one unit change in macroeconomic stability increase the -44.15 of revenues and also increase the expenditures. So that, macroeconomic stability improve the government revenues than Pakistan should be

develop. In this way, economic efficiency increase. The value of R^2 is 0.536711 and adjusted R^2 is 0.468580 are low i.e. deficiency of 0.80 that indicates variability in the macroeconomic stability due to independent variables is 55%. Since DGP has positive impact on macroeconomic stability.

Table 3: Descriptive Statistics

Variables	Mean	Std.dev.	Skewness	Kurtosis	Jarque-Bera	Probability
MS	11.7304	4.9502	0.2124	3.2972	0.4480	0.7993
GDP	0.00021	0.00025	1.18897	3.2771	9.5523	0.0084
UNR	4.848	1.80898	0.2225	2.2176	1.35026	0.50909
INV	1051217	3824858	5.83586	36.0044	2042.53	0.00000
APE	0.4677	0.0917	-2.8295	15.3191	306.3085	0.00000
APR	0.2393	0.060007	-0.10018	2.5752	0.3620	0.8344

Source: Author's Calculations (Eviews 7.0)

This table describes the descriptive statistic of the variables used in macroeconomic stability modal. When the value of probability 0.000 than there is no normal distribution. The average value of macroeconomic stability is 11.73. The standard deviation of macroeconomic stability is 4.95. The skewness is positive. The macroeconomic is leptokurtic. GDP is leptokurtosis. Unemployment is mesokurtic. The variables investment and adjusted provincial expenditure are leptokurtic and adjusted provincial revenue is mesokurtic. The Jarque-Bera is normally distributed. The average value of GDP is 0.00021. The standard deviation of GDP is 0.00025. The skewness is positive. The average value of Unemployment rate is 4.85. The skewness is positive. The mean values of adjusted provincial expenditures and revenues are 0.47 and 0.25 with variability 4.95 and 0.00025 respectively. It is observed that APE is normally distribution with the Kurtosis and negatively distributed with skewness and APR is also negatively skewed distribution. Ratios of adjusted provincial revenues and expenditures are normally distribution with kurtosis and negatively skewed distribution. The Jarque bera test of normality provides combined results of skewness and kurtosis.

Table 4: Correlation Matrix

Variables	MS	GDP	UNR	INV	APR	APE
MS	1					
GDP	-0.2523	1				
UNR	0.527941	-0.63033	1			
INV	0.338355	-0.13816	0.13851	1		
APR	0.588154	-0.56767	0.56320	0.151454	1	
APE	0.051389	-0.23557	0.30938	-0.1225	0.311594	1

Source: Author's Calculations (Eviews 7.0)

I have estimated pair wise zero order correlations in order to examine the degree of association among explanatory variables. The results are reported in table 3. Two measures of fiscal decentralization like adjusted provincial revenues and expenditures are used in the analysis. The pair – wise coefficient of correlation is useful to identify the problem of Multicollinearity. The correlation macroeconomic stability and GDP is -0.25 and it shows no multicollinearity. The correlation between macroeconomic stability and unemployment rate is 0.53 and shows no multicollinearity. Similarly, the correlation between macroeconomic stability and investment is 0.34 and shows no multicollinearity problem. In this way all variables show no multicollinearity problem.

V. Conclusion and Policy Recommendation

The purpose of this study is to determine the relationship between macroeconomic stability and fiscal decentralization in Pakistan. This study analyzed inconclusive results about the benefits of fiscal decentralization. This paper used the misery index to calculate the macroeconomic stability. Macroeconomic stability is the combination of inflation rate and unemployment rate. This study represents a positive significant impact of fiscal decentralization on macroeconomic stability of Pakistan, although, results are very weak for expenditure decentralization. In Pakistan, revenue decentralization is much impact than expenditure decentralization. From this study, the impact of decentralization appear to differ spending on revenue and expenditure shares to provinces, so that employment opportunities showed be generated. Macroeconomic stability is positive impact on gross domestic product. Policy maker should “run the number” attached with any particularly expenditure assignment to determine revenue needs. In Pakistan, inflation is double digit, that is why, It is negatively related to

employment . So that economic efficiency is increased by decentralization because , sub-national government have better information at local level and may provide public utilities health , education and recreation facilities at low price than central government. These external and internal economies increase more output and economic growth .

The study suggests that Government should adopt those policies which increase the government revenues and decrease the government expenditures. Fiscal powers particularly expenditure should be transferred to the provincial government. Central Bank and Federal Government should give the policies to reduce the cost push inflation .

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